

# PURDUE UNIVERSITY

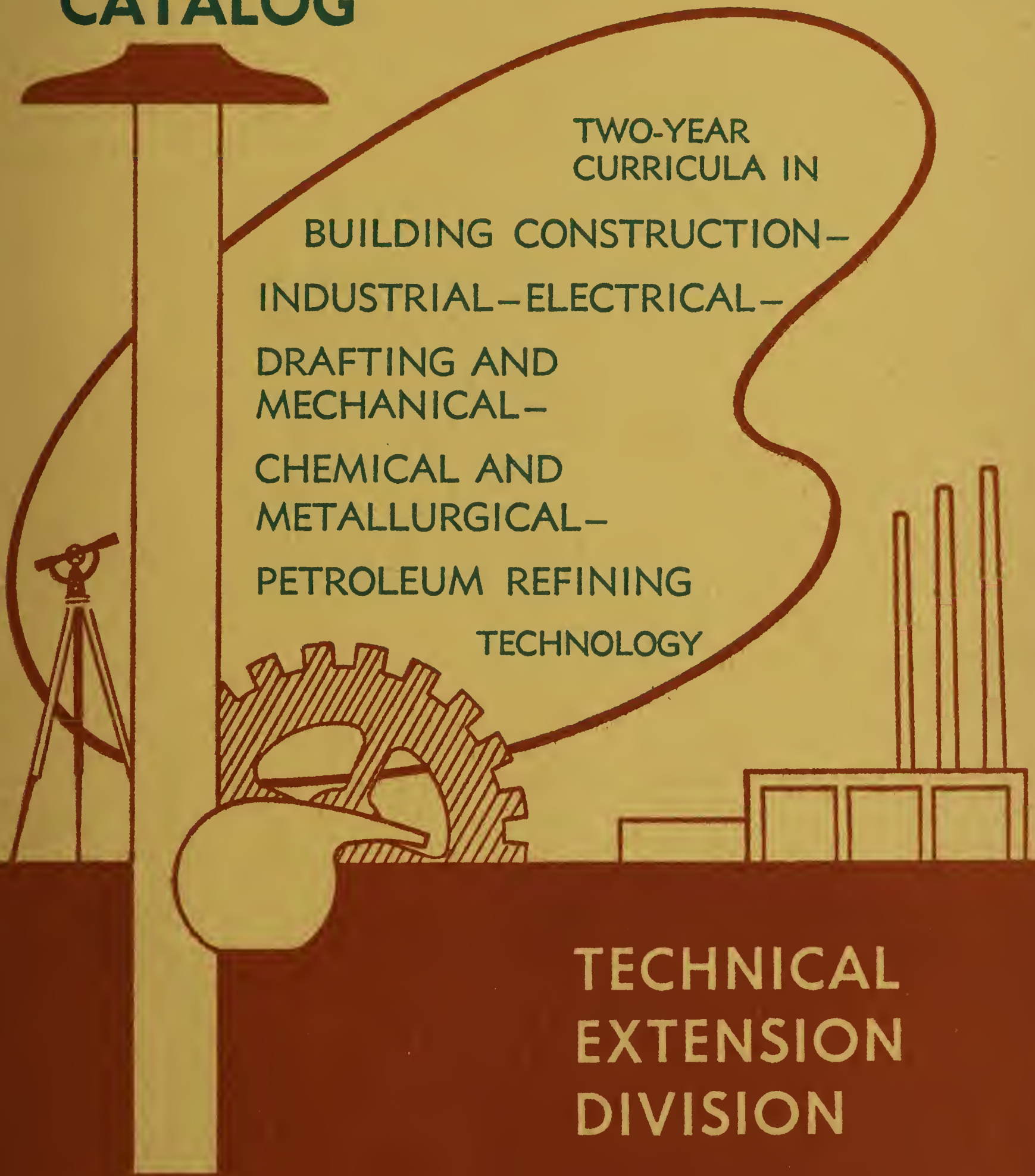
TECHNICAL  
INSTITUTE  
CATALOG

*1951-52*

TWO-YEAR  
CURRICULA IN

BUILDING CONSTRUCTION—  
INDUSTRIAL—ELECTRICAL—  
DRAFTING AND  
MECHANICAL—  
CHEMICAL AND  
METALLURGICAL—  
PETROLEUM REFINING  
TECHNOLOGY

TECHNICAL  
EXTENSION  
DIVISION



# CALENDAR

## 1951-1952

September 17.....	Orientation Examinations
September 20, 21, 22.....	Registration for First Semester
September 24, 7:00 A.M.....	First Semester Classes Begin
November 22.....	Thanksgiving Holiday
December 22, 12 Noon.....	Christmas Recess Begins
January 7, 7 A.M.....	Christmas Recess Ends
January 26, 12 Noon.....	First Semester Ends
January 28.....	Orientation Examinations
January 29, 30.....	Registration for Second Semester
January 31, 7 A.M.....	Second Semester Classes Begin
April 9, 6 P.M.....	Easter Recess Begins
April 17, 7 A.M.....	Easter Recess Ends
May 28.....	Second Semester Ends
June 5.....	Orientation Examinations
June 6, 7.....	Registration for Summer Session
June 9.....	Summer Session Classes Begin
July 4.....	Independence Day
August 2, 12 Noon.....	Summer Session Ends

The extension activities of Purdue University operate within the Technical Extension Division. Information regarding the extension offerings of the University may be obtained by writing to the Dean, Technical Extension Division, 209 Service and Stores Building, Purdue University, Lafayette, Indiana.

*... Furthering Technical  
Education ...*

## PURDUE UNIVERSITY

offers

A Complete Program

Through Its

## TECHNICAL INSTITUTES

*Calumet*

*Fort Wayne*

*Indianapolis*

*Michigan City*

The Catalog

for the

1951 - 1952

School Year

Building

Construction

Technology . . .

Pages 8-9; 20-22

Chemical and

Metallurgical

Technology . . .

Pages 10-11; 23-25

Drafting and

Mechanical

Technology . . .

Pages 12-13; 26-28

Electrical

Technology . . .

Pages 14-15; 29-31

Industrial

Technology . . .

Pages 16-17; 33-34

Petroleum

Refining

Technology . . .

Pages 18-19

# PURDUE UNIVERSITY

## Technical Institutes

### The Engineers' Council for Professional Development Defines the Technical Institute:

Curricula to be considered are technological in nature and lie in the post-high-school area. They differ in content and purpose from those of the vocational school on one hand and from those of the engineering college on the other. Curricula in this field are offered by a variety of institutions, and cover a considerable range as to duration and content of subject matter, but have in common the following purposes and characteristics:

- (1) The purpose is to prepare individuals for various technical positions or lines of activity encompassed within the field of engineering, but the scope of the programs is more limited than that required to prepare a person for a career as a professional engineer.
- (2) Programs of instruction are essentially technological in nature, based upon principles of science and include sufficient post-secondary school mathematics to provide the tools to accomplish the technical objectives of the curricula.
- (3) Emphasis is placed upon the use of rational processes in the principal fundamental portions of the curricula that fulfill the stated objectives and purposes.
- (4) Programs of instruction are briefer, and usually more completely technical in content than professional curricula, though they are concerned with the same general fields of industry and engineering. They do not lead to the baccalaureate degree in engineering. Such designations as Engineering Aide, Technical Aide, Associate in Engineering, and Engineering Associate are appropriate designations to be conferred upon the graduates of programs of technical institute type.
- (5) Training for artisanship is not included within the scope of education of technical institute type.

*The above definition has been the basis for developing and operating the Purdue University Division of Technical Institutes. Three curricula, Building Construction Technology, Drafting and Mechanical Technology, and Electrical Technology, have been inspected and accredited to date.*

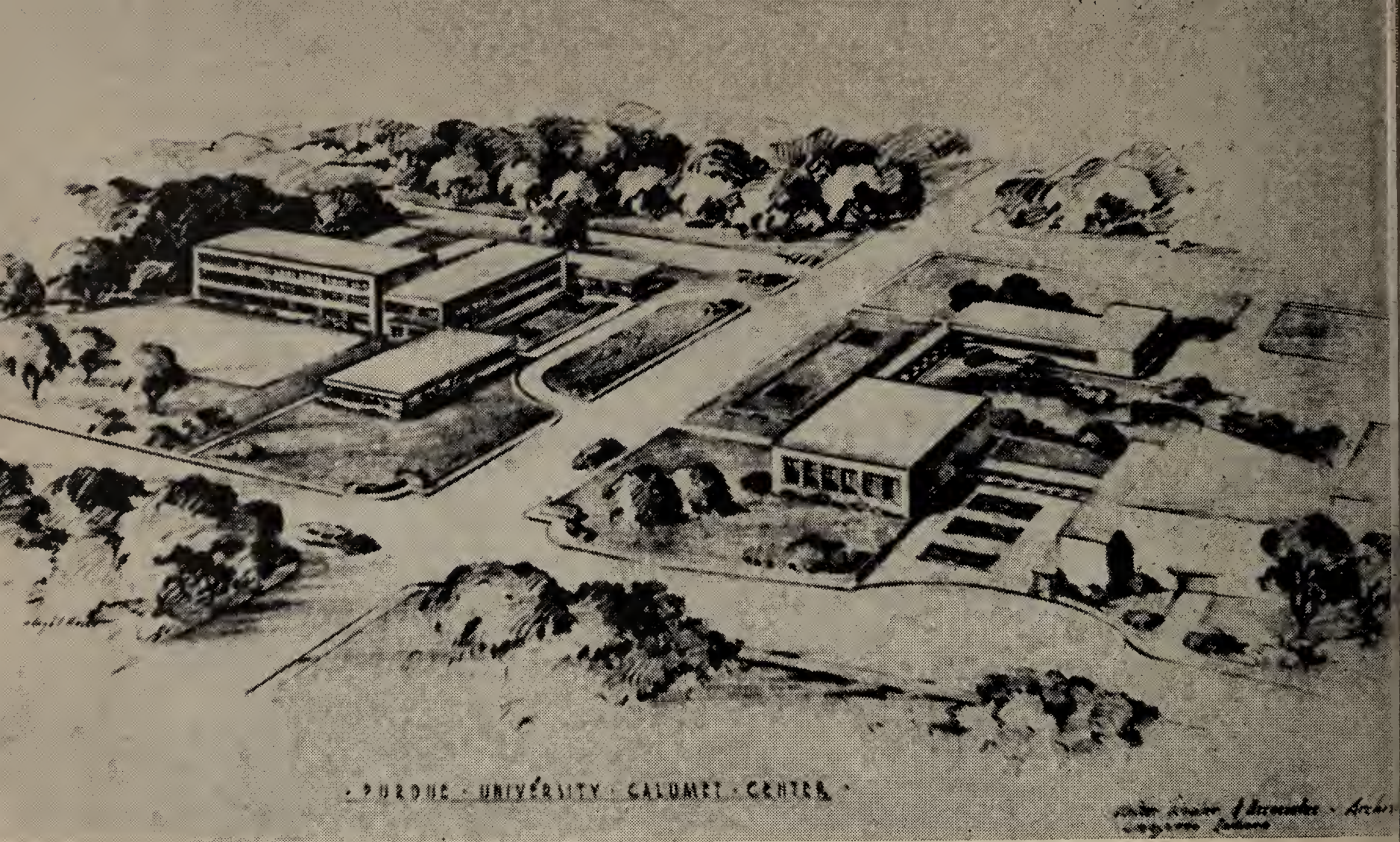
### Purdue's Technical Program Serves the People and the Industry of the State

District offices have been established in order to serve the people living in those communities and nearby cities. However, classes may be offered in any community where there is a need for the type of training Purdue offers.

For information not given in this catalog, contact any of the district offices listed on the back cover.

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*Architect's sketch of proposed Calumet Center campus. The first building (left center) will be completed this year.*

*Students in the Purdue-Barker Memorial Center at Michigan City work and study in an atmosphere of nineteenth-century elegance.*



# PURDUE UNIVERSITY

## Technical Institutes

### General Information

**P**URDUE UNIVERSITY is a state institution of higher learning, established by act of the General Assembly of Indiana, in 1869, under the provisions of the Morrill Act, which provided aid to the several states for the establishment of land-grant colleges, "without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts." For more than three-quarters of a century, Purdue has served the needs of the people of the state in the fields of agriculture, science, and technology.

Within recent years it has become apparent that there is an increasing need for trained personnel to supplement the work of the professional engineer. In order to meet this need the Division of Technical Institutes has been established as a part of the permanent plan of Purdue University.

The Division offers specialized, intensive courses designed to meet the demand for technically trained persons. The curricula parallel and are closely related to the engineering curricula of the University. However, they differ from the engineering-college type of curricula in that they emphasize applied and practical, rather than theoretical, study.

The facilities of the Division are available to those wishing to qualify as engineering aides and technicians. Recent graduates of Purdue's Technical Institute have been employed in industry as junior draftsmen, detailers, tracer draftsmen, foreman trainees, experimental technicians, junior time-study engineers, assistant supervisors of engineering records, electrical testers, sample checkers, junior engineers, chemical laboratory technicians, estimators, job analysts, architectural draftsmen, construction inspectors, building inspectors, manufacturer's agents, personnel interviewers, tool and die designers, machinery analysts, power station operators, and technical salesmen.

Various courses are offered to cover the basic knowledge and practices of present-day industry. Industrial leaders have been consulted to learn the kind of specific technical information required by persons who take jobs in industry. Many members of the instructional staff are drawn from local industries; but course administration, teaching material, and standards of instruction are under the direction of Purdue University. All student grade records are deposited with the University Registrar and all financial matters are handled through the same procedure as govern other University business.

Two semesters of class work are offered during each school year. A summer term is available in some instances.

Through the Division of Technical Institutes, Purdue University awards diplomas to those who satisfactorily complete a prescribed program of study.

### Special Services for Industry

The Technical Extension Division will cooperate with individual industries in the development and operation of their industrial training programs.

However, such programs may be limited to the extent that facilities and staff are available. Such service is rendered without charges other than the regular fees assessed for student enrollment in classes.

At the present time cooperative programs of this kind are being offered to employees of Indiana industries. Typical examples of the programs which have been offered or are being offered are as follows:

**Inland Steel Company.** Specialized programs are operated to train mechanical, electrical, chemical and metallurgical technicians.

**International Harvester Company.** Technical and cultural courses supplementing the workers' job activities are operated in formal classes:

**Joseph E. Seagram and Sons, Inc.** General-interest courses with college credit are offered in the plant for groups wishing further educational development.

### **Requirements for Admission**

**Procedure for Making Application.** An application for admission must be made upon a form obtainable from the Office of Admissions, Purdue University, Lafayette, Indiana. These forms are available also at each of the local offices listed on the back cover of this catalog.

The Director of Admissions will make a report to the applicant regarding the action taken upon the application. All applicants who have been graduated by an accredited high school or secondary school may be admitted.

Applicants who are not high-school graduates but who can submit evidence of an equivalent background of experience or training may be considered for admission. Previous scholastic record and extent of pertinent industrial experience are among the factors considered.

**Advanced Standing.** Applicants may be admitted with advanced standing:

1. By transfer of credits from other technical institutes or colleges or universities.
2. By passing special examinations in certain courses.
3. For studies carried on as part of civil or military training programs, for correspondence study, or for certain cumulative test records.
4. By evaluation of previous work experience.

Advanced standing, where granted, is stated in terms of the specific courses in which credit is allowed. Any student desiring advanced standing should make application in time for such credit to be approved before it is needed for enrollment in other courses. The applicant for advanced standing will be given a statement in writing concerning the action taken upon his request.

**Permission to Register.** The student should note that permission to register depends first of all upon being admitted to the Division of Technical Institutes. Authorizations from the Veterans Administration, or other agencies, are not to be confused with the official admission forms sent out by Purdue University.



**Orientation Examinations.** Each new student must take certain orientation examinations. This is required of all part-time as well as full-time students. The orientation tests should not be mistaken for entrance examinations.

### **Fields of Study and Diplomas**

The Division of Technical Institutes was established primarily to offer complete programs of study in technical fields leading to Associate Technical Aide and Technical Aide diplomas.

Altogether, six fields of study are available. Any or all of these can be offered in any Center where the enrollment, building facilities, and industrial need for graduates justify an expanded operation. The six programs are identified as follows:

- Building Construction Technology
- Chemical and Metallurgical Technology
- Drafting and Mechanical Technology
- Electrical Technology
- Industrial Technology
- Petroleum Refining Technology

These are outlined in the section on Program of Study (pages 6-19).

The Division of Technical Institutes awards two diplomas for successful completion of the required plans of study. The Associate Technical Aide diploma is awarded to each student who satisfactorily completes one of the six programs of study. If a student wishes to take additional work in an approved program of study, he will be awarded the Technical Aide diploma for the successful completion of 32 additional semester-hours of work.

All students working toward a diploma should have a plan of study for the semester which should be approved by a counselor at each registration. No minimum length of time is prescribed for students to complete their work toward a diploma. The semester-hours of credit for each student are permanently recorded at Purdue University; these credits are cumulative toward a diploma, regardless of whether the student is continuously enrolled in successive semesters, or whether all the work is taken at any one Center.

Students not working toward a diploma may enroll in any course offered, provided they can meet the stated prerequisites. A number of courses described in this catalog are not included in any program of study, and are offered primarily to meet the needs of such students.

### **Credits**

All courses in the Division of Technical Institutes are evaluated on a semester-hour basis\*. For each course under Description of Courses is shown the number of hours per week of recitation and laboratory or practice required for the credit given. Recitation and similar classroom work generally require outside preparation while laboratory or practice periods are usually self-contained.

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\* Prior to September, 1951, courses were evaluated on a credit-point basis for terms of 12 weeks duration.

## Fees

**Course Fees.** Fees and deposits for each course are listed with the course description in this catalog. They are paid to a representative of the University at the time of registration.

Veterans may submit in place of cash as payment for their fees a properly endorsed Veterans Administration form such as a Certificate of Eligibility and Entitlement (Public Law 346) or a Letter of Authority (Public Law 16). Whenever defects exist in such authorizations, and in the absence of authorization, the veteran is required to pay cash for fees and supplies under the regulations applying to all students.

A veteran registering for the first time is advised to consult well in advance of registration with the Purdue officials of the Center at which he plans to register.

**Breakage Fees.** Course fees include the cost of normal breakage and wear and tear on equipment. An additional charge will be levied against individuals for excessive waste, loss, or breakage as may occur. Such special charges must be paid before credit in the course will be given.

**Diploma Fee.** Students in the Division of Technical Institutes must pay a diploma fee of five dollars not less than thirty days before the close of the semester in which they expect to complete their work for a diploma.

**Examinations for Advanced Standing.** Technical Institute examinations for advanced standing will be administered on a group basis, free of charge, on one day only, prior to the beginning of any regular semester. Students interested should inquire at the Center office for dates and details.

Students requesting examinations at other than the regularly scheduled times will be charged a fee as follows:

- (1) Those currently enrolled for 12 or more semester-hours of work will be charged \$2.00 for each examination.
- (2) All others must pay \$10 for each examination.

**Withdrawal.** In order to effect a withdrawal from any class, a student must notify the Center office at the time of withdrawal. Discontinuance of class attendance is not the basis for withdrawal, and students who do not notify the office when they plan to withdraw will be given a failing grade in each course involved.

**Refunds.** Course fees will be refunded under any one of the following conditions:

1. Withdrawal during first and second weeks of semester, 80 per cent refund.
2. Withdrawal during third and fourth weeks of semester, 60 per cent refund.
3. Withdrawal during fifth and sixth weeks of semester, 40 per cent refund.
4. Withdrawal after sixth week of semester, no refund.



*Center students participate in extra-curricular activities. Here students are editing the Purdue Riveter, Fort Wayne student newspaper.*

Students who register for a course and do not attend class will be withdrawn as of the first day of class and entitled to a refund of eighty per cent of the course fees paid.

Deposits on equipment are subject to regular service and breakage charges.

Refunds are not transferable from one registration period to another or from one student to another.

To be eligible for a refund the student must notify the extension office and apply for a refund at the Center where he is registered at the time of his withdrawal.

#### **Grading System\***

The following grades are used by the Division of Technical Institutes:

6, Excellent; 5, Good; 4, Fair; 3, Passing; 2, Condition; 1, Failure; 0, Incomplete; W, Withdrawn with satisfactory performance; W1, Withdrawn with unsatisfactory performance.

Only two grades will be given in a non-credit course; S, Satisfactory; U, Unsatisfactory.

**Scholarship Index.** For every student a scholarship index will be computed at the end of each semester.

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\* Prior to September, 1951, grades were A, B, C, Passing; F, Failure.

# Programs of Study

## Associate Technical Aide

Six programs of study have been prepared for students who wish to qualify for the Associate Technical Aide diploma:

- Building Construction Technology
- Chemical and Metallurgical Technology
- Drafting and Mechanical Technology
- Electrical Technology
- Industrial Technology
- Petroleum Refining Technology

Any or all of these programs may be offered in those Centers where the need, the facilities, and the enrollment warrant.

Tabular listings of courses, by semesters, for the six programs of study are given on the following pages to guide students in making their own plans. Any plan differing from those shown must be approved by a counselor.

The number of courses and the total semester-hours of credit required for the Associate Technical Aide diploma differ for the six programs. In all, however, approximately the same general organization has been followed. The programs are composed of:

### A. *Fundamental Courses*

- Mathematics
- Physics
- Chemistry
- Drawing
- English
- Industrial Management

### B. *Non-technical Courses*

- Government
- Economics
- Psychology
- Speech

### C. *Major Field Courses*

- Specialized instruction related to the particular field of study

A student desiring a diploma in any one of the six fields must establish credit in each course listed or its equivalent. Students may transfer credit from other institutions, substitute work-experience for certain courses, or pass examinations for advanced standing to establish credit equivalent to that received for satisfactorily completing a course. Such credit must be approved before it is needed for enrollment in dependent courses. Courses not listed

in the following tables may be substituted for certain non-technical or major field courses upon prior written consent of the Educational Office. No substitutions for fundamental courses will be allowed.

### **Technical Aide**

Students who have met the requirements for the Associate Technical Aide diploma are eligible to become candidates for the Technical Aide diploma. An approved plan of study for each individual student must include courses selected to give a well-rounded program of technical and non-technical courses, and totalling not less than 32 semester-hours.

The plan of study may continue the original field of specialization or may be adapted to the student's actual work situation. The Division of Technical Institutes is enthusiastic in its effort to facilitate plans of work-and-study on a cooperative basis with various industries.

Any student who, because of schedule difficulties, desires to work toward the Technical Aide diploma before qualifying for the Associate Technical Aide diploma must receive prior approval of courses to be included in the advanced plan of study.

### **Program Planning**

**Full-time Students.** Four semesters (two years) are required for full-time students to complete requirements for the Associate Technical Aide diploma. Students schedule between 15 and 19 semester-hours of work per semester. Students who do not follow the sequence as indicated on the following pages may have difficulty in arranging satisfactory schedules.

Students wishing to qualify for more than one Associate Technical Aide diploma may do so by working out an acceptable schedule with the Center counselor. Any student who satisfactorily completes all of the courses in a given program is eligible for a diploma in that field of study.

Full-time programs for the Technical Aide diploma are not offered regularly at present.

**Part-time Students.** Students who are working may enroll on a part-time basis. The same sequence of courses as is used by the full-time students should be followed. However, five to six calendar years may be needed to complete requirements for the Associate Technical Aide diploma since four to eight semester-hours per semester are a sufficient load. Any scheduled course for which prerequisites have been met may be taken. Each student should have an approved plan of study adapted to his working schedule.

At present, the courses in a Technical Aide program of study may be scheduled on a part-time basis. This is desirable since work experience paralleling study is helpful.

**Students Not Working for Diplomas.** Students not working for diplomas may enroll in any course for which they are qualified. Any course listed in the catalog for which there is sufficient demand may be offered.

# Building Construction Technology

## Associate Technical Aide Diploma

Designed to prepare students primarily for technological services with architects, contractors, and building material suppliers in the light construction industry, this major field of specialization is also designed to help the student who is interested in going into business for himself.

Emphasis is placed upon courses in architectural and structural drafting, frame and masonry construction, materials, specifications, regulations, estimating, surveying, and the related courses in mathematics, physics, and chemistry.

Also included are courses dealing with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Satisfactory completion of the courses listed is required for the Associate Technical Aide diploma in Building Construction Technology.

Course descriptions are given in the back of this catalog.

### *First Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
BC 52	Plan Reading .....	1	\$ 7
BC 54	Architectural Drawing .....	2	23
GN 52	English Grammar and Composition	2	14
GN 61	Psychology .....	2	14
PS 51	Introductory Chemistry .....	3	31
PS 61	Mathematics: Geometry and Algebra .....	4	28
PS 71	Physics: Mechanics and Electricity..	4	36
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		18	

### *Second Semester*

BC 55	Frame Construction.....	2	\$23
BC 71	Building Materials .....	3	21
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education .....	0	5-12
PS 62	Mathematics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
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*Third Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
BC 53	Building Regulations.....	2	\$14
BC 56	Masonry Construction .....	2	23
BC 62	Perspective Drawing .....	1	11
BC 81	Mechanics of Materials.....	3	25
DM 56	Graphical Computations .....	2	23
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government .....	2	14
IT 52	Business Organization.....	2	14
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		16	

*Fourth Semester*

BC 57	Structural Drafting.....	2	\$24
BC 64	Freehand Drawing.....	2	23
BC 72	Specifications and Contract Documents .....	4	28
BC 73	Quantity Survey.....	3	25
BC 75	Elementary Surveying.....	2	21
BC 88	History of Architecture.....	2	14
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
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		17	

*Students have an opportunity to use equipment similar to that used in industry.*



# Chemical & Metallurgical Technology

## Associate Technical Aide Diploma

This program of study has been developed to meet the needs of two groups whose interests are related yet not identical. The plans of study have been worked out in such a way that all may enroll for the same courses in the first semester. In the second semester those wishing specialization in industrial chemistry may follow option A, and those wishing specialization in metallurgy may follow option B.

Both options include instruction in the fundamentals of industrial management, certain non-technical subjects, mathematics, and physics, as well as in the major field of specialization.

**Industrial Chemistry, Option A**, is designed to prepare students for technological services in chemical manufacturing plants and processing industries as well as for technician positions in general chemical laboratories.

**Metallurgy, Option B**, is designed to prepare students for technological services in steel mills and metal processing and fabricating industries as well as for technician positions in general metallurgical laboratories.

Satisfactory completion of the courses listed for either option is required for the Associate Technical Aide diploma in Chemical and Metallurgical Technology.

Course descriptions are given in the back of this catalog.

### *First Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
DM 55	Technical Drawing .....	2	\$23
GN 52	English Grammar and Composition	2	14
GN 61	Psychology .....	2	14
PS 51	Introductory Chemistry .....	3	31
PS 61	Mathematics: Geometry and Algebra .....	4	28
PS 71	Physics: Mechanics and Electricity..	4	36
		17	

### **Option A Industrial Chemistry**

#### *Second Semester*

CM 51	Industrial Chemistry: Fundamentals .....	2	\$17
CM 52	Industrial Chemistry: Petroleum...	2	19
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education.....	0	5-12
PS 62	Mathematics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
		17	



*Third Semester*

CM 53	Industrial Chemistry: Organic.....	3	\$30
CM 54	Industrial Chemistry: Qualitative....	3	34
CM 70	General Metallurgy.....	3	21
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government.....	2	14
IT 51	Industrial Organization and Production .....	4	28
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			17

*Fourth Semester*

CM 55	Industrial Chemistry: Quantitative	3	\$38
CM 56	Industrial Chemistry: Physics.....	4	39
CM 57	Chemical Unit Processes.....	3	29
DM 82	Instrumentation .....	3	27
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 70	Human Relations in Industry.....	2	14
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			17

**Option B Metallurgy**

*Second Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
CM 51	Industrial Chemistry: Fundamentals .....	2	\$17
CM 71	Ferrous Metallurgy .....	3	21
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education.....	0	5-12
PS 62	Mathematics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
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			18

*Third Semester*

CM 54	Industrial Chemistry: Qualitative....	3	\$34
CM 73	Physical Metallurgy.....	4	36
DM 75	Heat Transfer .....	3	26
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government.....	2	14
IT 51	Industrial Organization and Production .....	4	28
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			18

*Fourth Semester*

CM 55	Industrial Chemistry: Quantitative	3	\$38
CM 72	Non-Ferrous Metallurgy.....	2	14
CM 74	Metallography .....	3	33
DM 82	Instrumentation .....	3	27
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 70	Human Relations in Industry.....	2	14
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# Drafting and Mechanical Technology

## Associate Technical Aide Diploma

The program in Drafting and Mechanical Technology has been developed with two options, Mechanical, Option A, and Production Planning, Option B. The student may elect either option during his second year.

Emphasis is placed upon courses in drafting and design, industrial materials and processes, and the related courses in mathematics, physics, and chemistry. Also included are courses dealing with fundamentals of industrial management and with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

**Mechanical, Option A**, is designed to prepare students primarily for technological services in drafting and design departments, mechanical maintenance divisions, testing and inspection laboratories, and related industrial production units. This field of specialization stresses the fundamentals of mechanics and mechanisms as applied to industrial problems.

**Production Planning, Option B**, is designed to prepare students primarily for technological services in tool engineering involving the selection of methods, tools, and machines for economical production.

Satisfactory completion of the courses listed for either option is required for the Associate Technical Aide diploma in Drafting and Mechanical Technology.

Course descriptions are given in the back of this catalog.

### *First Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
DM 55	Technical Drawing .....	2	\$23
GN 52	English Grammar and Composition	2	14
GN 61	Psychology .....	2	14
PS 51	Introductory Chemistry .....	3	31
PS 61	Mathematics: Geometry and Algebra .....	4	28
PS 71	Physics: Mechanics and Electricity..	4	36
		17	

### *Second Semester*

DM 56	Graphical Computations .....	2	\$23
DM 80	Materials and Processes.....	3	21
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education.....	0	5-12
PS 62	Mathematics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
		18	

## Option A Mechanical

### *Third Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
DM 57	Machine and Tool Drawing.....	2	\$24
DM 70	Mechanics: Statics and Dynamics....	4	28
DM 73	Elementary Machine Design.....	3	30
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government .....	2	14
IT 51	Industrial Organization and Production .....	4	28
		—	
		17	

### *Fourth Semester*

DM 71	Strength of Materials.....	4	\$28
DM 72	Mechanism .....	4	37
DM 74	Advanced Machine Design.....	4	37
GN 60	Physical Education .....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 70	Human Relations in Industry.....	2	14
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		16	

## Option B Production Planning\*

### *Third Semester*

DM 57	Machine and Tool Drawing.....	2	\$24
DM 58	Elementary Die Design.....	3	30
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government .....	2	14
IT 51	Industrial Organization and Production .....	4	28
IT 56	Production Planning and Control.....	4	34
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### *Fourth Semester*

DM 59	Jig and Fixture Design.....	3	\$30
DM 60	Advanced Tool Design.....	4	37
GN 60	Physical Education .....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 59	Production Procedures .....	4	28
IT 62	Production Cost Analysis.....	2	14
IT 70	Human Relations in Industry.....	2	14
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\* Production Planning, Option B, has been developed in collaboration with the educational committee of the American Society of Tool Engineers and is particularly adapted to the student who wishes a fundamental, yet versatile program of technical studies.

# Electrical Technology

## Associate Technical Aide Diploma

The program in Electrical Technology with options in Industrial Electricity, and Radio and Television follows a common plan of study during the first year and provides specialization in the second year. Included, in addition to technical subjects are courses dealing with fundamentals of industrial management and with some of the historical, economic, and human-relations aspects of our American industrial life, all related to the individual.

**Industrial Electricity, Option A**, is designed to prepare students primarily for technological services with electrical utilities, with manufacturers of electrical equipment, in electrical maintenance and instrument departments of industrial plants, and in related positions. This major field of specialization stresses the application of direct- and alternating-current theory to electrical machinery and instruments. Emphasis is placed upon courses in circuit theory, machinery, electrical measurements, electronic control, and related courses in mathematics, physics, and chemistry.

**Radio and Television, Option B**, is designed to prepare students primarily for technological services with equipment manufacturers and for the installation and maintenance of receivers. Emphasis is placed upon courses in circuit theory, receiver circuits and fundamentals, electrical measurements, and related courses in mathematics, physics, and chemistry.

Satisfactory completion of the courses listed for either option is required for the Associate Technical Aide diploma in Electrical Technology.

Course descriptions are given in the back of this catalog.

### *First Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
DM 55	Technical Drawing .....	2	\$23
GN 52	English Grammar and Composition	2	14
GN 61	Psychology .....	2	14
PS 51	Introductory Chemistry .....	3	31
PS 61	Mathematics: Geometry and Algebra .....	4	28
PS 71	Physics: Mechanics and Electricity..	4	36
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		17	

### *Second Semester*

ET 53	Electrical Circuits .....	5	\$42
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education.....	0	5-12
PS 62	Mathematics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
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		18	

**Option A Industrial Electricity**

*Third Semester*

ET 54	Electronics .....	4	\$35
ET 55	Electrical Measurements.....	5	42
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government.....	2	14
IT 51	Industrial Organization and Production .....	4	28
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		17	

*Fourth Semester*

ET 60	Electrical Machines .....	5	\$42
ET 61	Control of Motors.....	4	28
ET 62	Blueprints and Diagrams.....	2	19
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 70	Human Relations in Industry.....	2	14
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		15	

**Option B Radio and Television**

*Third Semester*

ET 54	Electronics .....	4	\$35
ET 55	Electrical Measurements.....	5	42
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government.....	2	14
IT 51	Industrial Organization and Production .....	4	28
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		17	

*Fourth Semester*

ET 70	Radio .....	5	\$42
ET 71	Television .....	5	45
ET 72	Circuit Diagrams .....	2	19
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 70	Human Relations in Industry.....	2	14
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		16	

# Industrial Technology

## Associate Technical Aide Diploma

This major field of specialization is designed to prepare students primarily for technological services in the industrial engineering areas of production planning and control, plant layout, quality control, job evaluation, and cost analysis. It also covers the essentials of management with which foremen, supervisors, and administrative personnel in general are concerned.

Typical jobs are time-study man, methods planner, production control clerk, stock supervisor, cost analyst, job analyst, and personnel interviewers.

Emphasis is placed upon courses in motion and time study, job evaluation, wage incentives, production and operation planning, plant layout, industrial safety, and courses in mathematics, physics, and chemistry.

Also included are courses dealing with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Satisfactory completion of the courses listed is required for the Associate Technical Aide diploma in Industrial Technology.

Course descriptions are given in the back of this catalog.

### *First Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
GN 52	English Grammar and Composition .....	2	\$14
GN 61	Psychology .....	2	14
IT 51	Industrial Organization and Production .....	4	28
PS 61	Mathematics: Geometry and Algebra .....	4	28
PS 71	Physics: Mechanics and Electricity..	4	36
		16	

### *Second Semester*

DM 80	Materials and Processes.....	3	\$21
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education.....	0	5-12
IT 70	Human Relations in Industry.....	2	14
PS 62	Mathematics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
		18	

*Third Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
DM 55	Technical Drawing .....	2	\$23
GN 54	Practical Speaking .....	2	14
GN 62	Democratic Government .....	2	14
IT 53	Industrial Safety.....	2	14
IT 56	Production Planning and Control..	4	34
PS 51	Introductory Chemistry .....	3	31
PS 65	Quality Control.....	2	14
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		17	

*Fourth Semester*

GN 55	Conference Speaking .....	2	\$14
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
IT 54	Motion and Time Study.....	3	25
IT 57	Plant Layout.....	3	27
IT 58	Job Evaluation and Incentives.....	4	28
IT 62	Production Cost Analysis.....	2	14
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		16	

*Modern, up-to-date laboratories in the Centers are being constantly improved to provide the best teaching facilities.*



# Petroleum Refining Technology

## Associate Technical Aide Diploma

This major field of specialization is designed to prepare students for technological services in the manufacturing operations of petroleum refineries.

Emphasis is placed upon courses in refinery practices and operation, product control and treatment, and related courses in mathematics, physics, and chemistry. Also included are courses dealing with fundamentals of industrial organization and management and with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Satisfactory completion of the courses listed is required for the Associate Technical Aide diploma in Petroleum Refining Technology.

Course descriptions are given in the back of this catalog.

### *First Semester*

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
DM 55	Technical Drawing .....	2	\$23
GN 52	English Grammar and Composition	2	14
GN 61	Psychology .....	2	14
PS 51	Introductory Chemistry .....	3	31
PS 61	Mathematics: Geometry and Algebra .....	4	28
PS 71	Physics: Mechanics and Electricity	4	36

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*Each year, Technical Institute graduates from appropriate graduation exercises, during which*





*Second Semester*

CM 52	Industrial Chemistry: Petroleum....	2	\$19
CM 56a	Petroleum Chemistry: Physics.....	2	18
CM 63	Quality and Product Control.....	2	23
GN 60	Physical Education.....	0	5-12
GN 63	Economics of Industry.....	2	14
PS 62	Mathemetics: Trigonometry and Algebra .....	5	35
PS 73	Physics: Electricity and Heat.....	4	36
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		17	

*Third Semester*

CM 54	Industrial Chemistry: Qualitative....	3	\$34
CM 61	Petroleum Refinery Operations I....	3	29
DM 75	Heat Transfer .....	3	26
GN 54	Practical Speaking.....	2	14
GN 62	Democratic Government .....	2	14
IT 51	Industrial Organization and Production .....	4	28
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		17	

*Fourth Semester*

CM 55	Industrial Chemistry: Quantitative..	3	\$38
CM 62	Petroleum Refinery Operations II..	3	29
DM 81	Piping, Valves, and Pumps.....	2	17
DM 82	Instrumentation .....	3	27
GN 53	Technical Report Writing.....	4	28
GN 60	Physical Education.....	0	5-12
IT 70	Human Relations in Industry.....	2	14
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		17	

*the various Centers assemble for approval receive Technical Institute diplomas.*



# Description of Courses

## Building Construction Technology

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>BC 52</b>	<b>Plan Reading</b> 1 hour recitation each week Symbols, conventional representations of simple building plans.	<b>1</b>	<b>\$7.00</b>
<b>BC 53</b>	<b>Building Regulations</b> 2 hours recitation each week Building codes, ordinances, and regulations with emphasis on those for structures in Indiana.	<b>2</b>	<b>\$14.00</b>
<b>BC 54</b>	<b>Architectural Drawing</b> 6 hours laboratory each week Introduction to architectural drawing including use of instruments, lettering, orthographic projection, isometric views, and simple working drawings.	<b>2</b>	<b>\$23.00</b>
<b>BC 55</b>	<b>Frame Construction</b> 6 hours laboratory each week Must be preceded by BC 54 Simple wood-frame structures, such as houses, framing members and details; elementary design problems.	<b>2</b>	<b>\$23.00</b>
<b>BC 56</b>	<b>Masonry Construction</b> 6 hours laboratory each week Must be preceded by BC 54 Simple masonry structures, such as small stores; analysis of design, strength, and construction details.	<b>2</b>	<b>\$23.00</b>
<b>BC 57</b>	<b>Structural Drafting</b> 6 hours laboratory each week Must be preceded by BC 54, BC 81, DM 56 Detailing simple structural steel, reinforced concrete, and wood structures; elementary design principles.	<b>2</b>	<b>\$24.00</b>
<b>BC 62</b>	<b>Perspective Drawing</b> 3 hours laboratory each week Must be preceded by BC 54 Simple problems in one-, two-, and three-point perspective systems.	<b>1</b>	<b>\$11.00</b>
<b>BC 63</b>	<b>Color in Buildings</b> 6 hours laboratory each week Basic principles of color origin, design, combinations, terminology, and application.	<b>2</b>	<b>\$23.00</b>
<b>BC 64</b>	<b>Freehand Drawing</b> 6 hours laboratory each week Must be preceded by BC 54 A beginning course in freehand drawing with emphasis toward architectural rendering.	<b>2</b>	<b>\$23.00</b>
<b>BC 71</b>	<b>Building Materials</b> 3 hours recitation each week Must be preceded by PS 51 Materials and items used in building construction.	<b>3</b>	<b>\$21.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>BC 72</b>	<b>Specifications and Contract Documents</b> 4 hours recitation each week Must be preceded by BC 55, BC 56, GN 53 Preparation of general conditions and major phases of building construction specifications, agreements, contracts, liens, and bonds.	<b>4</b>	<b>\$28.00</b>
<b>BC 73</b>	<b>Quantity Survey</b> 2 hours recitation, 3 hours practice each week Must be preceded by BC 55, BC 56, BC 71 Approximate and detailed methods of estimating materials and labor required to erect a building.	<b>3</b>	<b>\$25.00</b>
<b>BC 74</b>	<b>Building Finance</b> 2 hours recitation each week Legal and financial regulations and restrictions affecting financial aspects of building construction.	<b>2</b>	<b>\$14.00</b>
<b>BC 75</b>	<b>Elementary Surveying</b> 1 hour recitation, 3 hours practice each week Must be preceded by PS 62 Plane surveying using 100' steel tape, level, and transit.	<b>2</b>	<b>\$21.00</b>
<b>BC 76</b>	<b>Advanced Surveying</b> 1 hour recitation, 3 hours practice each week Must be preceded by BC 75 Preliminary and final location surveys including curves, profiles, slope stakes, and yardage estimates.	<b>2</b>	<b>\$21.00</b>
<b>BC 77</b>	<b>Construction Methods</b> 4 hours recitation each week Must be preceded by BC 55, BC 56 Methods used in erecting buildings.	<b>4</b>	<b>\$28.00</b>
<b>BC 81</b>	<b>Mechanics of Materials</b> 2 hours recitation, 3 hours practice each week Must be preceded by PS 62, PS 71 Stress and strain; properties of materials; riveted joints; shear and movement; bending and deflection of beams.	<b>3</b>	<b>\$25.00</b>
<b>BC 82</b>	<b>Piping Layout and Design</b> 3 hours recitation, 3 hours laboratory each week Design of industrial process piping and controls.	<b>4</b>	<b>\$33.00</b>
<b>BC 83</b>	<b>Heating, Ventilating, and Air Conditioning</b> 4 hours recitation each week Must be preceded by PS 73 Types of heating systems, heat transmission and insulation, heat exchangers, fans and ducts, air-vapor mixtures, air conditioning.	<b>4</b>	<b>\$28.00</b>
<b>BC 84</b>	<b>Refrigeration</b> 4 hours recitation each week Must be preceded by PS 73 Basic principles of refrigeration and their application to the installation, operation, and maintenance of refrigeration equipment.	<b>4</b>	<b>\$28.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>BC 86</b>	<b>Wiring Standards and Underwriters' Code</b> 3 hours recitation each week An investigation of the legal and technical requirements and practices in wiring machinery, equipment, and buildings; insurance codes; building codes; underwriters' specifications.	<b>3</b>	<b>\$21.00</b>
<b>BC 87</b>	<b>Acoustics of Buildings</b> 4 hours recitation each week Must be preceded by PS 73 Principles of acoustics as applied to buildings.	<b>4</b>	<b>\$28.00</b>
<b>BC 88</b>	<b>History of Architecture</b> 2 hours recitation each week Must be preceded by BC 52 Survey of ancient and modern forms of architecture.	<b>2</b>	<b>\$14.00</b>
<b>BC 89</b>	<b>Survey of City Planning</b> 4 hours recitation each week Must be preceded by BC 75 Community planning problems, such as street planning, zoning, subdivision layout.	<b>4</b>	<b>\$28.00</b>
<b>BC 90</b>	<b>Building Construction Technology</b> Hours as arranged with staff Primarily for students who have completed requirements for the Associate Technical Aide diploma Special studies in Building Construction Technology.	<b>2 or 4</b>	<b>\$14.00 or \$28.00</b>

*Electronic laboratories are of particular importance to students interested in both the Industrial Electricity and the Radio and Television options.*



## Chemical and Metallurgical Technology

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>CM 51</b>	<b>Industrial Chemistry: Fundamentals</b> 1 hour recitation, 3 hours practice each week Must be preceded by PS 51, PS 61 Quantitative interpretations of chemical equations by numerical problems and practical application to industrial processes, using the principles of Introductory Chemistry.	<b>2</b>	<b>\$17.00</b>
<b>CM 52</b>	<b>Industrial Chemistry: Petroleum</b> 1 hour recitation, 3 hours laboratory or practice each week Must be preceded by PS 51, PS 61 Study of the simpler hydrocarbons generally associated with petroleum.	<b>2</b>	<b>\$19.00</b>
<b>CM 53</b>	<b>Industrial Chemistry: Organic</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by CM 52 Emphasis on class reactions and practical applications in the major organic chemical industries.	<b>3</b>	<b>\$30.00</b>
<b>CM 54</b>	<b>Industrial Chemistry: Qualitative</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by PS 51, PS 62 Systematic semimicro analysis with emphasis upon modern industrial techniques.	<b>3</b>	<b>\$34.00</b>
<b>CM 55</b>	<b>Industrial Chemistry: Quantitative</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by CM 54 An introduction to gravimetric, titrimetric, and potentiometric methods applicable to modern industrial practices.	<b>3</b>	<b>\$38.00</b>
<b>CM 56</b>	<b>Industrial Chemistry: Physics</b> 2 hours recitation, 3 hours laboratory, 3 hours practice each week Must be preceded or accompanied by CM 55 General properties of matter, phenomena of solutions, electrochemistry, thermochemistry, chemical statics and dynamics.	<b>4</b>	<b>\$39.00</b>
<b>CM 56a</b>	<b>Petroleum Chemistry: Physics</b> 1 hour recitation, 3 hours practice each week Must be preceded or accompanied by CM 52, PS 62 First half of CM 56 as it applies to petroleum. Students may attend CM 56 for first half of semester.	<b>2</b>	<b>\$18.00</b>
<b>CM 56b</b>	<b>Industrial Chemistry: Physics, Part II</b> 1 hour recitation, 3 hours laboratory each week Must be preceded by CM 56a Second half of CM 56.	<b>2</b>	<b>\$21.00</b>
<b>CM 57</b>	<b>Chemical Unit Processes</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by CM 51, CM 53, CM 54, DM 55, PS 73 Major industrial chemical processes, equipment, and machinery. Manufacture, transportation, and uses of selected chemicals; unit processes and flow diagrams.	<b>3</b>	<b>\$29.00</b>
<b>CM 58</b>	<b>Laboratory Techniques</b> 6 hours laboratory each week Must be preceded by CM 55 Special laboratory analysis techniques.	<b>2</b>	<b>\$31.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>CM 60</b>	<b>Petroleum Refinery Practices</b> 4 hours recitation each week Survey of the petroleum refining industry.	<b>4</b>	<b>\$28.00</b>
<b>CM 61</b>	<b>Petroleum Refinery Operations I</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by CM 56a and preceded or accompanied by DM 75 Introduction to fundamental petroleum refinery operations and advanced petroleum chemistry.	<b>3</b>	<b>\$29.00</b>
<b>CM 62</b>	<b>Petroleum Refinery Operations II</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by CM 61 Continuation of CM 61 with emphasis on distillation, thermal and catalytic cracking.	<b>3</b>	<b>\$29.00</b>
<b>CM 63</b>	<b>Quality and Product Control</b> 1 hour recitation, 3 hours laboratory each week Must be preceded or accompanied by CM 52 Physical and chemical testing of petroleum products, utilization of results for control of plant operations and product quality.	<b>2</b>	<b>\$23.00</b>
<b>CM 70</b>	<b>General Metallurgy</b> 3 hours recitation each week Must be preceded by CM 51 Fundamentals common to all production metallurgy; refining and forming processes, constitution diagrams, alloys, testing.	<b>3</b>	<b>\$21.00</b>
<b>CM 71</b>	<b>Ferrous Metallurgy</b> 3 hours recitation each week Must be preceded or accompanied by CM 51 Appliances and methods used in the reduction, refining, and shaping of ferrous alloys.	<b>3</b>	<b>\$21.00</b>
<b>CM 72</b>	<b>Non-Ferrous Metallurgy</b> 2 hours recitation each week Must be preceded by CM 51 Fundamentals of production metallurgy with specific consideration of the methods employed in the reduction and refining of selected non-ferrous metals.	<b>2</b>	<b>\$14.00</b>
<b>CM 73</b>	<b>Physical Metallurgy</b> 3 hours recitation, 3 hours laboratory each week Must be preceded by CM 71, PS 73 Basic principles: solid solutions, intermetallic compounds, equilibrium diagrams, plastic deformation, recrystallization and grain growth, heat treatment, and phase changes in the solid state.	<b>4</b>	<b>\$36.00</b>
<b>CM 74</b>	<b>Metallography</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by CM 73 Preparation and microscopic examinations of metals.	<b>3</b>	<b>\$33.00</b>
<b>CM 75</b>	<b>Advanced Ferrous Metallurgy</b> 3 hours recitation each week Must be preceded by CM 74 Continuation of CM 71 with emphasis on physical and chemical considerations.	<b>3</b>	<b>\$21.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>CM 76</b>	<b>Advanced Non-Ferrous Metallurgy</b> 3 hours recitation each week Must be preceded by CM 72, CM 74 Continuation of CM 72.	<b>3</b>	<b>\$21.00</b>
<b>CM 77</b>	<b>Advanced Physical Metallurgy</b> 3 hours recitation each week Must be preceded by CM 74 Continuation of CM 73.	<b>3</b>	<b>\$21.00</b>
<b>CM 78</b>	<b>Advanced Metallography</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by CM 74 Heat treatment and its effects upon the microstructure and properties of steel.	<b>3</b>	<b>\$33.00</b>
<b>CM 79</b>	<b>Inspection and Testing of Metals</b> 1 hour recitation, 3 hours laboratory each week Must be preceded by CM 74 Common methods employed in the inspection of metals.	<b>2</b>	<b>\$20.00</b>
<b>CM 80</b>	<b>Steel Production Processes I</b> 2 hours recitation each week Survey of essential processes in the production of steel.	<b>2</b>	<b>\$14.00</b>
<b>CM 81</b>	<b>Steel Production Processes II</b> 2 hours recitation each week Must be preceded by CM 80 Continuation of CM 80.	<b>2</b>	<b>\$14.00</b>
<b>CM 82</b>	<b>Industrial Chemistry: General</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by PS 53 Chemical principles and practical applications of chemical laws and theories; fundamental laboratory methods.	<b>2 2/3</b>	<b>\$25.00</b>
<b>CM 83</b>	<b>Ferrous Metallurgy</b> 2 hours recitation each week Must be preceded by CM 82 Survey of the appliances and methods used in the reduction, refining, and shaping of ferrous alloys.	<b>2</b>	<b>\$14.00</b>
<b>CM 90</b>	<b>Chemical and Metallurgical Technology</b> Hours as arranged with staff Primarily for students who have completed the requirements for the Associate Technical Aide diploma Special studies in Chemical and Metallurgical Technology.	<b>2 or 4</b>	<b>\$14.00 or \$28.00</b>

## Drafting and Mechanical Technology

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>DM 55</b>	<b>Technical Drawing</b> 6 hours laboratory each week Must be preceded or accompanied by PS 61 Introduction to technical drawing, including use of instruments*, lettering, and orthographic projection. Preparation of working detail and assembly drawings from simple layouts with emphasis upon industrial practices.	<b>2</b>	<b>\$23.00</b>
<b>DM 56</b>	<b>Graphical Computations</b> 6 hours laboratory each week Must be preceded by BC 54 or DM 55 and preceded or accompanied by PS 62 Descriptive and analytic geometry principles applied to the solution of engineering problems; intersections and development of planes and solids; layout of objects in space; and clearance.	<b>2</b>	<b>\$23.00</b>
<b>DM 57</b>	<b>Machine and Tool Drawing</b> 6 hours laboratory each week Must be preceded by DM 56, DM 80 Preparation of complete working drawings, from layouts, for interchangeable manufacture; computation of fits, limit dimensions, and tolerances; tool drawing principles and methods; fundamentals of cutting tools and gages.	<b>2</b>	<b>\$24.00</b>
<b>DM 58</b>	<b>Elementary Die Design</b> 1 hour recitation, 6 hours laboratory each week Must be preceded or accompanied by DM 57 Fundamental principles of the design and construction of piercing, blanking, forming, drawing, progressive, and compound dies.	<b>3</b>	<b>\$30.00</b>
<b>DM 59</b>	<b>Jig and Fixture Design</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by DM 57 Fundamental principles of the design and construction of drill and combination jigs, and milling, reaming, and tapping fixtures.	<b>3</b>	<b>\$30.00</b>
<b>DM 60</b>	<b>Advanced Tool Design</b> 2 hours recitation, 6 hours laboratory each week Must be preceded by DM 58, and preceded or accompanied by DM 59 Continuation of DM 58 and 59.	<b>4</b>	<b>\$37.00</b>
<b>DM 61</b>	<b>Gage Design</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by DM 57 Design of gages for interchangeable manufacture.	<b>3</b>	<b>\$30.00</b>
<b>DM 62</b>	<b>Freehand Technical Sketching</b> 3 hours laboratory each week Must be preceded by DM 55 A first course in surface rendering and the representation of objects by means of isometric, oblique, and perspective drawing.	<b>1</b>	<b>\$11.00</b>
<b>DM 63</b>	<b>Technical Drawing</b> 4 hours laboratory each week Must be preceded by PS 68 Introduction to technical drawing, including use of instruments, lettering, orthographic projection, simple working drawings, and sketching.	<b>1 1/3</b>	<b>\$15.00</b>

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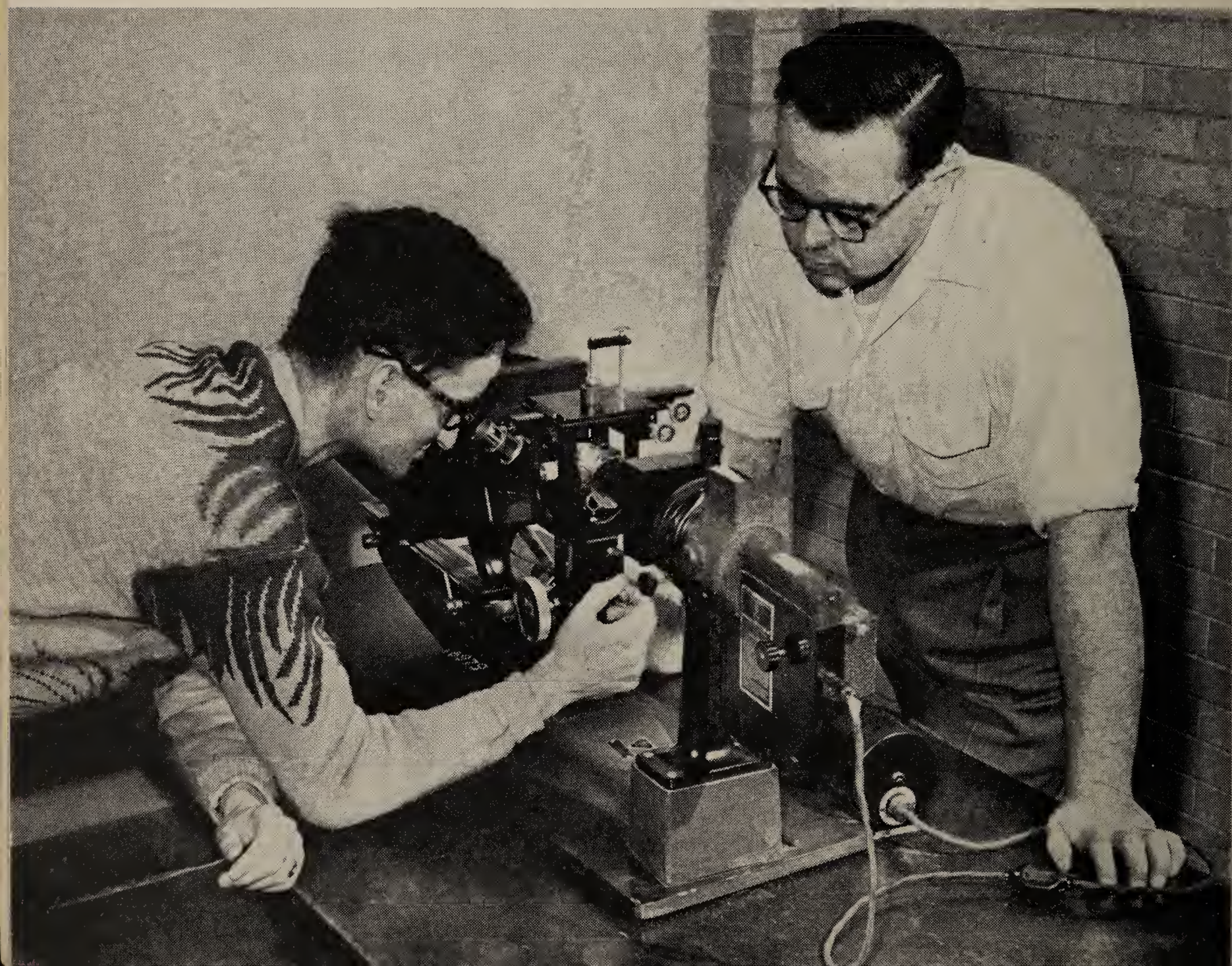
\* Deposit for rental of drawing instruments, \$10. At the end of the semester, \$9 will be refunded if set is intact. This provision is optional for the student.



<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>DM 70</b>	<b>Mechanics: Statics and Dynamics</b> 4 hours recitation each week Must be preceded by PS 62, PS 71 Forces acting on rigid bodies at rest and in motion.	<b>4</b>	<b>\$28.00</b>
<b>DM 71</b>	<b>Strength of Materials</b> 4 hours recitation each week Must be preceded by DM 70 Stress and strain; riveted and welded joints; torsion; shear; bending and deflection of beams; combined stresses; columns.	<b>4</b>	<b>\$28.00</b>
<b>DM 72</b>	<b>Mechanism</b> 2 hours recitation, 6 hours laboratory each week Must be preceded by DM 57, DM 70 Displacements, motions, and velocities; linkages, gears, cams, and flexible connections.	<b>4</b>	<b>\$37.00</b>
<b>DM 73</b>	<b>Elementary Machine Design</b> 1 hour recitation, 6 hours laboratory each week Must be preceded by DM 80, and preceded or accompanied by DM 70 Design and experimental procedure, calculation of machine members, and elements of testing.	<b>3</b>	<b>\$30.00</b>
<b>DM 74</b>	<b>Advanced Machine Design</b> 2 hours recitation, 6 hours laboratory each week Must be preceded by DM 73 and preceded or accompanied by DM 71 Proportioning of machine parts according to the laws of mechanics. Functional and economic characteristics of machine elements.	<b>4</b>	<b>\$37.00</b>
<b>DM 75</b>	<b>Heat Transfer</b> 2 hours recitation, 3 hours laboratory or practice each week Must be preceded by PS 62, PS 73 Fundamentals of heat transfer as applied to furnaces, heat exchangers, steam generators, cooling towers, evaporators, and distilling equipment.	<b>3</b>	<b>\$26.00</b>
<b>DM 80</b>	<b>Materials and Processes</b> 3 hours recitation each week Applications and characteristics, both physical and chemical, of the materials most commonly used in industry; the mechanical processes by which materials may be shaped or formed.	<b>3</b>	<b>\$21.00</b>
<b>DM 81</b>	<b>Piping, Valves, and Pumps</b> 1 hour recitation, 3 hours practice each week Must be preceded by PS 71 and preceded or accompanied by PS 62 Basic principles of the flow and equipment used in transfer of fluids.	<b>2</b>	<b>\$17.00</b>
<b>DM 82</b>	<b>Instrumentation</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by PS 73 Basic principles of pyrometry and fluid metering; instruments used in the measurement and control of temperature, pressure, level, and flow of fluids.	<b>3</b>	<b>\$27.00</b>
<b>DM 83</b>	<b>Hydraulic Pressure Circuits</b> 3 hours recitation each week Must be preceded by DM 55, PS 61 Application of hydraulic power to machine tools and other equipment.	<b>3</b>	<b>\$21.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>DM 84</b>	<b>Flow Meters</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by IT 60 Principles of flow measurement, displacement and area-type meters, dismantling, and maintenance of principal types of meters.	<b>3</b>	<b>\$27.00</b>
<b>DM 85</b>	<b>Ferrous Materials and Processes</b> 2 hours recitation each week Applications and characteristics, both physical and chemical, of the more common ferrous materials; the mechanical processes by which they may be shaped or formed.	<b>2</b>	<b>\$14.00</b>
<b>DM 90</b>	<b>Drafting and Mechanical Technology</b> Hours as arranged with staff Primarily for students who have completed the requirements for the Associate Technical Aide diploma Special studies in Drafting and Mechanical Technology.	<b>2 or 4</b>	<b>\$14.00 or \$28.00</b>

*Many courses, such as those in the field of Chemical and Metallurgical Technology, require specialized equipment. This metalloscope photographs microscopic specimens.*



## Electrical Technology

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>ET 53</b>	<b>Electrical Circuits</b> 4 hours recitation, 3 hours laboratory each week Must be preceded or accompanied by PS 62, PS 73 Nature of direct and alternating currents; practical concepts of power, power-factor, resistance, reactance, and impedance; simple d.c. and a.c. circuit calculations.	<b>5</b>	<b>\$42.00</b>
<b>ET 53a</b>	<b>Electrical Circuits, Part I</b> 2 hours recitation, 2 hours laboratory each week Must be preceded or accompanied by PS 62, PS 73 First half of ET 53.	<b>2 2/3</b>	<b>\$23.00</b>
<b>ET 53b</b>	<b>Electrical Circuits, Part II</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 53a Second half of ET 53.	<b>2 2/3</b>	<b>\$23.00</b>
<b>ET 54</b>	<b>Electronics</b> 3 hours recitation, 3 hours laboratory each week Must be preceded by ET 53 Principles of operation of the more common types of vacuum and gas tubes, thyratrons, photoelectric cells, and simple circuits used with them.	<b>4</b>	<b>\$35.00</b>
<b>ET 55</b>	<b>Electrical Measurements</b> 4 hours recitation, 3 hours laboratory each week Must be preceded by ET 53 Elements of direct- and alternating-current measuring instruments and methods of measurement, with industrial applications.	<b>5</b>	<b>\$42.00</b>
<b>ET 55a</b>	<b>Electrical Measurements, Part I</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 53 First half of ET 55.	<b>2 2/3</b>	<b>\$23.00</b>
<b>ET 55b</b>	<b>Electrical Measurements, Part II</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 55a Second half of ET 55.	<b>2 2/3</b>	<b>\$23.00</b>
<b>ET 60</b>	<b>Electrical Machines</b> 4 hours recitation, 3 hours laboratory each week Must be preceded by ET 53 Construction details and practical industrial application of direct-current and alternating-current machines and apparatus.	<b>5</b>	<b>\$42.00</b>
<b>ET 60a</b>	<b>Electrical Machines, Part I</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 53 First half of ET 60.	<b>2 2/3</b>	<b>\$23.00</b>
<b>ET 60b</b>	<b>Electrical Machines, Part II</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 60a Second half of ET 60.	<b>2 2/3</b>	<b>\$23.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>ET 61</b>	<b>Control of Electric Motors</b> 4 hours recitation each week Must be preceded or accompanied by ET 60 Standard controllers for electric motors used in industry.	<b>4</b>	<b>\$28.00</b>
<b>ET 62</b>	<b>Blueprints and Diagrams</b> 1 hour recitation, 3 hours laboratory each week Must be preceded by DM 55 A practical study of symbols and standards used on electrical blueprints and wiring diagrams primarily for control circuits.	<b>2</b>	<b>\$19.00</b>
<b>ET 63</b>	<b>Power Generation and Transmission</b> 3 hours recitation each week Must be preceded by ET 60 Details of generating station equipment and transmission line systems.	<b>3</b>	<b>\$21.00</b>
<b>ET 64</b>	<b>Power Distribution</b> 3 hours recitation each week Must be preceded by ET 60 Details of bus systems, circuit breaker, protective relays, and the part they play in the power distribution system of an industrial plant. National Electrical Code.	<b>3</b>	<b>\$21.00</b>
<b>ET 65</b>	<b>Applications of Electronics to Industry</b> 4 hours recitation, 3 hours laboratory each week Must be preceded by ET 54 Circuits using electron tubes to control or measure: such as resistance welding, elevator leveling, counting, sorting, high-frequency heating, photometric measurements.	<b>5</b>	<b>\$42.00</b>
<b>ET 66</b>	<b>D.C. Circuits and Machines</b> 3 hours recitation, 2 hours laboratory each week Must be preceded by PS 78 and preceded or accompanied by PS 68 D.C. machines and apparatus from the viewpoint of construction details, industrial application, and methods of operation.	<b>3 2/3</b>	<b>\$30.00</b>
<b>ET 67</b>	<b>A.C. Circuits</b> 3 hours recitation, 2 hours laboratory each week Must be preceded by ET 66 Nature of alternating current, methods of generation, single-phase currents, polyphase currents; practical concepts of power, power-factor, reactive factor, reactance and impedance; simple a.c. circuit calculations.	<b>3 2/3</b>	<b>\$30.00</b>
<b>ET 68</b>	<b>A.C. Machines</b> 3 hours recitation, 2 hours laboratory each week Must be preceded by ET 67 Construction details and practical performance of transformers, induction motors, alternators, synchronous motors, rectifiers, and other common alternating-current apparatus.	<b>3 2/3</b>	<b>\$30.00</b>
<b>ET 70</b>	<b>Radio Fundamentals</b> 4 hours recitation, 3 hours laboratory each week Must be preceded by ET 54 Structural details and elementary principles of operation of rectifiers, amplifiers of various types, modulation, demodulation, receivers and their characteristics.	<b>5</b>	<b>\$42.00</b>
<b>ET 70a</b>	<b>Radio Fundamentals, Part I</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 54 First half of ET 70.	<b>2 2/3</b>	<b>\$23.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>ET 70b</b>	<b>Radio Fundamentals, Part II</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 70a Second half of ET 70.	<b>2 2/3</b>	<b>\$23.00</b>
<b>ET 71</b>	<b>Television Fundamentals</b> 4 hours recitation, 3 hours laboratory each week Must be preceded or accompanied by ET 70 Structural details and elementary principles of operation of television equipment.	<b>5</b>	<b>\$45.00</b>
<b>ET 71a</b>	<b>Television Fundamentals, Part I</b> 2 hours recitation, 2 hours laboratory each week Must be preceded or accompanied by ET 70 First half of ET 71.	<b>2 2/3</b>	<b>\$25.00</b>
<b>ET 71b</b>	<b>Television Fundamentals, Part II</b> 2 hours recitation, 2 hours laboratory each week Must be preceded by ET 71a Second half of ET 71.	<b>2 2/3</b>	<b>\$25.00</b>
<b>ET 72</b>	<b>Circuit Diagrams</b> 1 hour recitation, 3 hours laboratory each week Must be preceded by DM 55, and preceded or accompanied by ET 71 A practical study of symbols and standards used on radio and television circuit diagrams.	<b>2</b>	<b>\$19.00</b>
<b>ET 80</b>	<b>Electrical Laboratory</b> 2 hours laboratory each week Electrical equipment operation and maintenance practices.	<b>2/3</b>	<b>\$9.00</b>
<b>ET 81</b>	<b>Motor Control</b> 3 hours recitation each week Application of controllers for electric motors used in the steel industry.	<b>3</b>	<b>\$21.00</b>
<b>ET 82</b>	<b>Survey of Electronics</b> 3 hours recitation each week Must be preceded by ET 67 A survey of electronics as it applies to controls used in industry.	<b>3</b>	<b>\$21.00</b>
<b>ET 90</b>	<b>Electrical Technology</b> Hours as arranged with staff Primarily for students who have completed the requirements for the Associate Technical Aide diploma Special studies in electrical technology.	<b>2 or 4</b>	<b>\$14.00 or \$28.00</b>

## General Studies

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>GN 52</b>	<b>English Grammar and Composition</b> 2 hours recitation each week Concentrated review of basic principles of grammar, spelling, and punctuation; composition as used in business letter writing.	<b>2</b>	<b>\$14.00</b>
<b>GN 53</b>	<b>Technical Report Writing</b> 4 hours recitation each week Must be preceded by GN 52 The preparation and presentation of industrial reports.	<b>4</b>	<b>\$28.00</b>
<b>GN 54</b>	<b>Fundamentals of Practical Speaking</b> 2 hours recitation each week Organization and presentation of material, voice and physical delivery, audience reaction.	<b>2</b>	<b>\$14.00</b>
<b>GN 55</b>	<b>Conference Speaking</b> 2 hours recitation each week Must be preceded by GN 54 Training and practice in conducting and participating in small group con- ferences, shop committees, instructional groups, problem-solving groups.	<b>2</b>	<b>\$14.00</b>
<b>GN 60</b>	<b>Physical Education</b> In centers where facilities are available, students may avail themselves of instruction in intramural activities.	<b>0</b>	<b>\$5.00 to \$12.00</b>
<b>GN 61</b>	<b>Psychology</b> 2 hours recitation each week Selected fundamentals of psychology and their application to the solution of industrial personnel problems.	<b>2</b>	<b>\$14.00</b>
<b>GN 62</b>	<b>Democratic Government</b> 2 hours recitation each week Democratic processes in government and the practices within which they function.	<b>2</b>	<b>\$14.00</b>
<b>GN 63</b>	<b>Economics of Industry</b> 2 hours recitation each week Economic principles as applied to major industrial problems.	<b>2</b>	<b>\$14.00</b>
<b>GN 64</b>	<b>Urban Sociology</b> 3 hours recitation each week Analysis of the causes and effects of the expansion of industrial cities.	<b>3</b>	<b>\$21.00</b>
<b>GN 65</b>	<b>Historical Review of American Institutions</b> 2 hours recitation each week Nature of government, democracy, the Constitution, finance, commerce, public works, and the general welfare.	<b>2</b>	<b>\$14.00</b>
<b>GN 66</b>	<b>History of Industrial Expansion</b> 2 hours recitation each week Place of industry in the development of America.	<b>2</b>	<b>\$14.00</b>
<b>GN 67</b>	<b>Geography of Raw Materials</b> 2 hours recitation each week Sources of strategic materials and the resulting effect upon industry and civilization.	<b>2</b>	<b>\$14.00</b>
<b>GN 68</b>	<b>Labor Problems</b> 3 hours recitation each week Problems of labor and their possible solutions, organized labor, solutions offered by liberal employers, state interference between capital and labor.	<b>3</b>	<b>\$21.00</b>

## Industrial Technology

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>IT 51</b>	<b>Industrial Organization and Production</b> 4 hours recitation each week A detailed survey of organizational structures; operational, financial, marketing, and accounting activities; duties of management, planning, control, personnel, safety, wages, policy and human factors necessary for effective management.	<b>4</b>	<b>\$28.00</b>
<b>IT 52</b>	<b>Business Organization</b> 2 hours recitations each week Survey of organizational structures; operational, financial, marketing, and accounting activities; and human factors necessary for effective management of a small business.	<b>2</b>	<b>\$14.00</b>
<b>IT 53</b>	<b>Industrial Safety</b> 2 hours recitation each week Must be preceded by IT 51 Economics of accident prevention, mechanical safeguards, fire prevention, occupational disease, first aid, safety codes, and educational programs.	<b>2</b>	<b>\$14.00</b>
<b>IT 54</b>	<b>Motion and Time Study</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by IT 51 and PS 62 Techniques of motion and time study, process charts, operation charts, micro-motion study, therbligs, and stop-watch time study.	<b>3</b>	<b>\$25.00</b>
<b>IT 55</b>	<b>Advanced Motion and Time Study</b> 3 hours recitation, 3 hours laboratory each week Must be preceded by IT 54 Operation analysis, micromotion study, simo and possibility charts, standard data and formula construction.	<b>4</b>	<b>\$37.00</b>
<b>IT 56</b>	<b>Production Planning and Control</b> 3 hours recitation, 3 hours laboratory each week Must be preceded by DM 80, IT 51 Pre-production planning of the most economical methods, machines, operations, and materials for the manufacture of a product. The planning, scheduling, routing, and a detailed procedure of production control.	<b>4</b>	<b>\$34.00</b>
<b>IT 57</b>	<b>Plant Layout</b> 2 hours recitation, 3 hours laboratory each week Must be preceded by DM 55, IT 56 Arrangement of stock, machines, layout of aisles and use of space, and economical material handling for the highest efficiency of production.	<b>3</b>	<b>\$27.00</b>
<b>IT 58</b>	<b>Job Evaluation and Wage Incentives</b> 4 hours recitation each week Must be preceded by IT 56, IT 70, and preceded or accompanied by IT 54 A survey of the principles, practices, and problems of job evaluation and wage determination; factors influencing wages, job descriptions and evaluation, personnel relations, wage incentives, and rates.	<b>4</b>	<b>\$28.00</b>
<b>IT 59</b>	<b>Production Procedures</b> 4 hours recitation each week Must be preceded by IT 56 Primarily for students enrolled in Drafting and Mechanical Technology, <i>Option B</i> A survey of motion and time study and the layout of production equipment.	<b>4</b>	<b>\$28.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>IT 60</b>	<b>Principles of Measurement</b> 2 hours recitation each week Instruments and methods of measuring length, areas, volume, temperature and time.	<b>2</b>	<b>\$14.00</b>
<b>IT 61</b>	<b>Production Techniques</b> 3 hours recitation each week Must be preceded by IT 56 Continuation of operation planning with emphasis upon the equipment, tools, and techniques used in mass production. Adaptation of proposed plans to conform to existing facilities.	<b>3</b>	<b>\$21.00</b>
<b>IT 62</b>	<b>Production Cost Analysis</b> 2 hours recitation each week Must be preceded by IT 51 A survey of methods, the breakdown and cost analysis of labor, material, overhead cost, volume, physical facilities, and relative economy of engineering alternatives.	<b>2</b>	<b>\$14.00</b>
<b>IT 63</b>	<b>Industrial Accounting Fundamentals</b> 3 hours recitation each week Fundamental mechanics (rules for debit and credit) of accounting, principles of account classification, business forms and procedures, financial and operating statements, and elements of cost accounting — all from the viewpoint of industrial organization.	<b>3</b>	<b>\$21.00</b>
<b>IT 64</b>	<b>Cost Control</b> 3 hours recitation each week Must be preceded by IT 63, PS 62 Standard costs, estimating costs, distribution costs, various systems of cost accounting.	<b>3</b>	<b>\$21.00</b>
<b>IT 70</b>	<b>Human Relations in Industry</b> 2 hours recitation each week Must be preceded by GN 61, IT 51 A study of industrial personnel problems. Relations of the supervisor and his men.	<b>2</b>	<b>\$14.00</b>
<b>IT 71</b>	<b>Personnel Management</b> 3 hours recitation each week Must be preceded by IT 70 Personnel department, organized labor, employees in management, employment procedures and policy, training, job evaluation, wages and wage systems, extra-industrial activities, safety and health.	<b>3</b>	<b>\$21.00</b>
<b>IT 72</b>	<b>Legislation Affecting Industrial Relations</b> 4 hours recitation each week Wage contracts and payments, workmen's compensation and insurance, injunctions, strikes and boycotts, and statutes affecting labor.	<b>4</b>	<b>\$28.00</b>
<b>IT 73</b>	<b>Selection of Employees</b> 2 hours recitation each week Techniques and processes of employee selection of value to the prospective employee.	<b>2</b>	<b>\$14.00</b>
<b>IT 74</b>	<b>Technical Sales</b> 3 hours recitation each week Must be preceded by GN 63 Fundamentals of technical sales.	<b>3</b>	<b>\$21.00</b>
<b>IT 90</b>	<b>Industrial Technology</b> Hours as arranged with staff Primarily for students who have completed the requirements for the Associate Technical Aide diploma Special studies in Industrial Technology	<b>2 or 4</b>	<b>\$14.00 or \$28.00</b>



## Physical Sciences

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>PS 51</b>	<b>Introduction to Industrial Chemistry</b> 2 hours recitation, 3 hours laboratory each week Must be preceded or accompanied by PS 61 General principles of chemistry, including a study of elements and their simpler compounds. Special emphasis on topics most likely to be of importance in industrial activities.	<b>3</b>	<b>\$31.00</b>
<b>PS 53</b>	<b>Introduction to Chemistry of Steel</b> 2 hours recitation each week Must be preceded or accompanied by PS 67 Survey of fundamentals of chemistry of particular application to the steel industry.	<b>2</b>	<b>\$14.00</b>
<b>PS 61</b>	<b>Mathematics: Geometry and Algebra</b> 4 hours recitation each week Review of the fundamentals of arithmetic; study of selected topics from geometry and algebra with applications to the industrial problems.	<b>4</b>	<b>\$28.00</b>
<b>PS 62</b>	<b>Mathematics: Trigonometry and Algebra</b> 5 hours recitation each week Must be preceded by PS 61 Selected topics from trigonometry and algebra with applications to industrial problems.	<b>5</b>	<b>\$35.00</b>
<b>PS 62a</b>	<b>Mathematics: Trigonometry</b> 2 hours recitation each week Must be preceded by PS 61 Selected topics from trigonometry.	<b>2</b>	<b>\$14.00</b>
<b>PS 62b</b>	<b>Mathematics: Advanced Algebra</b> 3 hours recitation each week Must be preceded by PS 61 Selected topics from algebra.	<b>3</b>	<b>\$21.00</b>
<b>PS 63</b>	<b>Mathematics: Analytical Geometry and Calculus 4</b> 4 hours recitation each week Must be preceded by PS 62 Selected topics from analytical geometry and calculus with applications to industrial problems.	<b>4</b>	<b>\$28.00</b>
<b>PS 64</b>	<b>Graphical Representation</b> 6 hours laboratory each week Must be preceded by DM 55, PS 62 Industrial uses of charts, graphs, curves, alignment charts, and special slide rules; elementary statistical concepts.	<b>2</b>	<b>\$25.00</b>
<b>PS 65</b>	<b>Fundamentals of Quality Control</b> 2 hours recitation each week Must be preceded by PS 62 Basic concepts of statistics and their application to quality control.	<b>2</b>	<b>\$14.00</b>
<b>PS 66</b>	<b>Advanced Topics in Quality Control</b> 2 hours recitation each week Must be preceded by PS 65 Application of selected topics in statistics to more advanced phases of quality control.	<b>2</b>	<b>\$14.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>PS 67</b>	<b>Mathematics: Arithmetic and Algebra</b> 2 hours recitation each week Review of arithmetic. Fundamental concepts of algebra.	<b>2</b>	<b>\$14.00</b>
<b>PS 68</b>	<b>Mathematics: Algebra and Trigonometry</b> 2 hours recitation each week Must be preceded by PS 67 Selected topics from algebra and trigonometry with applications to the steel industry.	<b>2</b>	<b>\$14.00</b>
<b>PS 69</b>	<b>Mathematics: Algebra</b> 2 hours recitation each week Must be preceded by PS 68 Advanced topics in algebra and elements of statistics.	<b>2</b>	<b>\$14.00</b>
<b>PS 70</b>	<b>Control of Quality in Steel Production</b> 2 hours recitation each week Must be preceded by PS 69 Fundamentals of the control of quality in steel production.	<b>2</b>	<b>\$14.00</b>
<b>PS 71</b>	<b>Physics: Mechanics and Electricity</b> 3 hours recitation, 3 hours laboratory each week Must be preceded or accompanied by PS 61 Laws of simple machines, forces, linear and angular motion, conditions of equilibrium, and fluids. Elementary electricity.	<b>4</b>	<b>\$36.00</b>
<b>PS 72</b>	<b>Physics: Mechanics and Electricity</b> 4 hours recitation each week Must be preceded or accompanied by PS 61 Laws of simple machines, forces, linear and angular motion, conditions of equilibrium, and fluids. Elementary electricity.	<b>4</b>	<b>\$28.00</b>
<b>PS 73</b>	<b>Physics: Electricity and Heat</b> 3 hours recitation, 3 hours laboratory each week Must be preceded by PS 71 Continuation of electricity. Elementary principles of heat and their engineering applications. Wave motion, sound and light.	<b>4</b>	<b>\$36.00</b>
<b>PS 74</b>	<b>Physics: Electricity and Heat</b> 4 hours recitation each week Must be preceded by PS 72 Continuation of electricity. Elementary principles of heat and their engineering applications. Wave motion, sound and light.	<b>4</b>	<b>\$28.00</b>
<b>PS 75</b>	<b>Physics: Mechanics</b> 2 hours recitation each week Must be preceded or accompanied by PS 68 Survey of the fundamental laws of mechanics.	<b>2</b>	<b>\$14.00</b>
<b>PS 76</b>	<b>Physics: Heat</b> 2 hours recitation each week Must be preceded by PS 75 Survey of the fundamentals of heat.	<b>2</b>	<b>\$14.00</b>
<b>PS 77</b>	<b>Physics: Electricity</b> 2 hours recitation each week Must be preceded by PS 68 Survey of the elements of electricity.	<b>2</b>	<b>\$14.00</b>

<i>Course No.</i>	<i>Course Title</i>	<i>Credit</i>	<i>Fees</i>
<b>PS 78</b>	<b>Physies: Electricity</b> 3 hours recitation each week Must be preceded or accompanied by PS 67 Elements of electricity and their applications to industry.	<b>3</b>	<b>\$21.00</b>

# Technical Institute Staff

## Full Time

1951-1952

MAURICE R. GRANNEY, Head

- ROBERT L. ANDERSON (1947) .....Electrical Technology (Calumet)  
B.S., Rose Polytechnic Institute; graduate study, University of Pittsburgh; Registered Professional Engineer; four years manufacturing testing of electrical equipment.
- FRANK W. AVILA (1947) .....Drafting and Mechanical Technology  
(Fort Wayne)  
B.S.M.E., University of Notre Dame; twenty-two years machine and tool design engineering.
- NORMAN V. BENEDICT (1950) .....Industrial Technology (Calumet)  
B.S.E.E., Purdue University; graduate study, Purdue University; seven years industrial and electrical engineering.
- JOHN J. BORKERT (1948) .....Drafting and Mechanical Technology  
(Calumet)  
Carnegie Institute of Technology; Indiana University; twenty-seven years machine design and industrial engineering.
- HOWARD M. BRADFORD (1947) .....Industrial Technology (Indianapolis)  
Twenty-nine years industrial engineering and management.
- EDWIN H. ERNST (1946) .....General Studies (Indianapolis)  
B.A., M.A., Notre Dame; eight years teacher of English and history; seven years interviewer and investigator, commercial and government services.
- PAUL B. COX (1946) ....Drafting and Mechanical Technology (Fort Wayne)  
B.S.E.E., M.S.E., Purdue University; graduate study, Indiana University and University of Wisconsin; fourteen years teacher of mathematics; four years industrial drafting.
- PATRICK V. FLANNERY (1947) .....Physical Sciences (Calumet)  
B.S., St. Mary's College; N.S., M.S., Fordham University; eight years teacher of physics, chemistry, and mathematics.
- BENJAMIN B. FORT (1947) .....General Studies (Indianapolis)  
B.S., M.S., Butler University; graduate study, Indiana University; four years teacher of social studies; four years production control.
- L. FERNALD FOSTER, JR. (1950) .....General Studies (Indianapolis)  
B.A., Michigan State College; M.S., University of Wisconsin; two years teacher of speech and history.
- IRA N. GOFF (1946) ....Chemical and Metallurgical Technology (Calumet)  
A.B., Brown University; A.M., Columbia University; M.S., Missouri School of Mines; Ph.D., University of Wisconsin; six years steel mill research; fourteen years consulting engineering.
- ARDEN E. GRACIE, JR. (1946) .....Drafting and Mechanical Technology  
(Michigan City)  
B.S., Stout Institute; five years plant maintenance, tool and die designing.
- OTTO GUMPPER (1948) ....Building Construction Technology (Fort Wayne)  
B.S.C.E., Purdue University; ten years building contractor; eighteen years municipal engineering.

- FRANK D. HAYS (1946) .....General Studies (Calumet)  
Ph.B., A.M., Niagara University; graduate study Syracuse University; eight years teacher of social studies; one year chemical analyst.
- NICHOLAS HNATH (1947) .....Drafting and Mechanical Technology  
(Calumet)  
B.A., St. Procopius College, graduate study, University of Detroit; Journeyman Tool and Die Maker; six years tool inspection.
- JOHN F. JENKS (1950) .....Industrial Technology (Indianapolis)  
B.S.M.E., Purdue University; graduate study, Purdue University; thirty-two years sales engineering and industrial management.
- FREDERICK R. LISARELLI (1946) .....Drafting and Mechanical Technology  
(Michigan City)  
B.S., University of Alabama; M.A., Columbia University; six years machine design.
- THAD G. LUTZ (1946) .....Industrial Technology (Calumet)  
B.S.Ch.E., Carnegie Institute of Technology; fifteen years metallurgy and industrial engineering.
- LEO MARCUS (1946) .....Physical Sciences (Indianapolis)  
B.S., Purdue University; graduate study, Purdue University; four years aircraft physicist.
- DEAN W. MARTIN (1946) .....Physical Sciences (Indianapolis)  
B.S., Grove City College; graduate study, Cornell University and University of Chicago; eleven years teacher of physics; twenty-one years research laboratory.
- DONALD C. METZ (1946) .....Electrical Technology  
B.S.E.E., M.S.I.E., Purdue University; graduate study, University of Chicago; Registered Professional Engineer; ten years industrial purchasing and air conditioning engineering.
- THOMAS R. NUNN (1946) .....General Studies (Michigan City)  
A.B., Central Michigan College; A.M., University of Michigan; graduate study, University of Chicago; twenty-six years teacher of English; four years manufacturing.
- CONWELL J. POLING (1945) .....General Studies (Fort Wayne)  
A.B., Ohio Northern University; M.A. Ohio State University; six years teacher of social studies.
- JOSEPH C. RAPALSKI (1948) .....Electrical Technology (Calumet)  
B.S.E.E., Purdue University; graduate study, Purdue University; nine years electrical testing and maintenance.
- NICHOLAS C. RELICH (1948) .....Drafting and Mechanical Technology  
(Indianapolis)  
B.S., University of Illinois; graduate study, Illinois Institute of Technology, Purdue University; eleven years metallurgy.
- CHARLES F. RHODES (1948) .....Electrical Technology (Calumet)  
B.S.E.E., Lewis Institute of Technology; graduate study, Northwestern University; two years teacher of physics and radio, fourteen years manufacturing, drafting, and designing.
- FRANCIS F. SCHLOSSER (1946) .....Physical Sciences (Calumet)  
Ph.B., Ph.M., University of Wisconsin; twenty-two years teacher of chemistry and physics; consultant related industrial problems.
- LLOYD W. SCHOLL (1947) .....Building Construction Technology  
(Indianapolis)  
B.S., University of Illinois; Registered Architect; Registered Professional Engineer; six years structural engineering and drafting.

- FRANCIS C. SCHON (1946) .....Building Construction Technology  
(Indianapolis)  
University of Notre Dame; Purdue University; twenty years surveying and designing.
- ALBERT L. STEINKAMP (1947) .....Industrial Technology (Fort Wayne)  
B.S.E.E., Purdue University; graduate study, Purdue University; ten years sales engineering; four years plant layout and operation.
- CARROL H. STEVENS (1950) .....Physical Sciences (Calumet)  
B.A., Hastings College; M.A., Kansas State College; four years teacher of physics.
- HERMAN W. STOELK (1947) .....Drafting and Mechanical Technology  
(Indianapolis)  
Armour Institute of Technology; Morton College; twenty-five years tool engineering and design.
- THOMAS L. TWEEDLE (1946) .....Chemical and Metallurgical Technology  
(Calumet)  
B.S.Ch.E., Purdue University; graduate study, University of Chicago; thirteen years petroleum engineering.
- HAROLD A. WILLIAMSON (1946) .....General Studies (Calumet)  
B.S., Kansas State Teachers College; M.S. Kansas State College; graduate study, University of Kansas; fifteen years teacher of English, history, and speech.
- HOWARD L. WISNER (1946) .....Electrical Technology (Indianapolis)  
A.B., M.S., Indiana University; nine years teacher of physics and mathematics; two years electronics test engineering.
- CLARENCE H. ZACHER (1948) .....Drafting and Mechanical Technology  
(Calumet)  
B.S., Armour Institute of Technology; graduate study, Chicago Teachers College; seven years teacher of drafting; five years drafting, designing, and surveying.

*Members of the faculty maintain regular office hours to counsel with their students.*



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